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NAVY DEPARTMENT

# BUMED NEWS LETTER

a digest of timely information

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Vol. 2 Friday, September 3, 1943 No. 5

Epidemic Hepatitis, a War Disease, Etiology Unknown: During the past eighteen months there have been numerous reports of the occurrence of epidemic hepatitis in the armies and navies of the warring nations.

In peacetime epidemic hepatitis is primarily a disease of childhood. In wartime, however, like other childhood infections, it becomes predominantly a disease of young adult males. During the Civil War there were 22,569 cases and 161 deaths in a total of 2,218,559 troops; during the Boer War there were 5,649 cases. It occurred in troops during the War of 1812, the Spanish-American War and World War I. At the present time the Germans consider it to be a disease of major military importance.

The term "epidemic hepatitis" was first suggested by Meulengracht to describe more accurately the condition previously referred to as "acute catarrhal jaundice." It is an infectious disease that occurs in epidemics, the chief symptoms of which result from the parenchymatous (hepato-cellular) inflammation of the liver. It is no longer considered to be duodenal catarrh with blockage of the common bile duct with mucus. The term "epidemic jaundice" is not justified as it is likely that many of the cases are mild and never develop icterus.

Repeated and thorough attempts by able microbiologists have failed to discover the etiological agent of epidemic hepatitis. It has long been suspected that the disease was spread by direct contact and droplet infection, but not until recently (Findlay, 1943) was it shown that nasal washings from four donors ill in the pre-icteric stage of post-vaccinial hepatitis (clinically indistinguishable from epidemic hepatitis) produced a similar disease when instilled into the nares of four healthy recipients. This observation together with the facts that epidemic hepatitis like yellow fever confers a lasting immunity, like rabies has a long incubation period, and like influenza produces a leukopenia, has led to the assumption that the disease is caused by a "virus."

Histological examination of liver tissue obtained during the first ten days of illness shows that there exists an acute hepatitis unassociated with any form of bile-duct obstruction. According to Lieutenant Colonel Lucke of the Army Medical Museum, the chief pathological lesions are those of acute or

subacute yellow or red atrophy of the liver. The earliest lesions consist of frank necrosis of liver cells in the central parts of the lobules. Inclusion bodies are not found as they are in yellow fever.

The onset of epidemic hepatitis is gradual. The severity of the symptoms probably parallels the degree of liver damage. In the beginning there are different degrees of weakness, increased susceptibility to fatigue, lassitude, drowsiness, irritability, epigastric distress and anorexia. In most of the diagnosed cases the liver damage is sufficient to produce marked lemon-yellow jaundice with icteric indices as high as 300, dark-colored urine and lightly-colored stools. Fever is absent or slight. The leukocyte count is normal or slightly lowered. Often the liver is enlarged and tender. The spleen is often palpable.

The above represents the disease of average severity. It is likely that the majority of the cases are milder and often are undiagnosed in the absence of icterus. In a small percentage of cases the disease is severe showing a marked degree of hepatic insufficiency with exhaustion, coma, hemorrhagic diathesis, diffuse capillary bleeding and death from "acute yellow atrophy."

In general, recovery takes place in 4-8 weeks. There is no evidence that permanent liver damage occurs.

In the pre-icteric stage appendicitis must be ruled out because of the nausea that may be present and the radiation to the appendiceal region of the pain caused by acute hepatic congestion.

The severer forms of epidemic hepatitis must be distinguished from WEIL'S DISEASE. The latter is characteristically an acute febrile illness, associated with nephritis, severe muscular pain and tenderness in the limb muscles. Further, there is frequently in Weil's disease a clear-cut history of contact with rats or with water likely to have been contaminated with rat's urine. Conjunctival hemorrhages are said to be pathognomonic. Herpes labialis is common. Motile, hook-shaped leptospira are found (dark-field examination) in the plasma in the early stages and later in the urine sediment.

Epidemic hepatitis is often diagnosed and reported as cholangeitis, acute. A distinction should be made between the two. The former occurs predominantly in persons under thirty; the latter in the older age groups and in persons who give a history of previous attacks of jaundice with chills and fever. The two conditions are easily distinguished chemically, true cholangeitis (that is, a catarrhal inflammation limited to the bile ducts themselves) giving the laboratory findings of obstructive jaundice (elevation of the serum phosphatase and cholesterol), and epidemic hepatitis giving the findings usually associated with damage to the liver parenchyma. In determining the presence of parenchymal liver disease the most useful procedures are the bromsulphthalein, galactose tolerance, hippuric acid, and cephalin flocculation tests. Also in severe or prolonged epidemic hepatitis a lowering of the serum albumin and an elevation of the serum globulin give evidence of the impaired formation of albumin and the formation of abnormal globulins characteristic of this type of disturbance of hepatic function.

The incubation period is 20-40 days; usually about 28 days. Infectivity probably occurs only during the pre-icteric stage. Transmission is probably by droplet-infection. "All those that have not previously suffered are fair game." (Pickles). Once the disease occurs medical officers should remain on the alert for additional cases and the same precautions exercised in the control of upper respiratory infections should be instituted.

Attempts are now being made to relate epidemic hepatitis with the hepatitis that occurs in persons who have received injections of certain batches of measles convalescent serum, adult serum, mumps convalescent serum and yellow fever vaccine containing serum. Possibly, both in epidemic hepatitis and in the jaundice following the use of human serum, the conditions are due to infection with the same etiological factor, the immunity of childhood being overcome by the direct inoculation of the causative agent in the presence of as yet unknown factors. It is even conceivable that the mechanism by which arsenicals produce hepatitis may have something to do with disturbing this condition of immunity. Much of the present research is being conducted in human volunteers. (D.R.M.)

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The Terminology of Malaria: The American Journal of Public Health announced in an editorial in the July 1943 issue that it had adopted a terminology based upon etiology. It will use the term Vivax malaria to designate benign tertian, Falciparum malaria to designate malignant tertian (Aestivo-Autumnal), Malariae malaria to designate quartan, and Ovale malaria to designate that associated with the presence of the Plasmodium ovale. The 1942 edition of the Standard Nomenclature of Disease and Operations has also adopted an etiological classification for malaria.

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Ham Associated With Food Poisoning Again: The monthly sanitary report from a U.S. Naval station contained the following report of a "Food Poisoning" outbreak:

"On Friday, April 16, 1943, between 1800 and 2000, approximately forty-five men reported to the dispensary complaining of nausea, vomiting, moderate to severe abdominal cramps, diarrhea, and varying degrees of shock. The diagnosis of Food Poisoning, Bacterial (Ham) #1332 was made, and appropriate treatment given. Of the men seen, five were admitted to the sick list, and the others returned to their quarters. All the victims were definitely improved the following morning.

"Investigation revealed that men assigned to different working parties off this station had eaten ham salad sandwiches made of ground ham, mayonnaise, onions, and pickles. The sandwiches were prepared on Thursday night, April 15, about 2400, for a lunch to be eaten at 1200 Friday, April 16, (twelve hours later). Furthermore, the ham salad was prepared from left-over ham cooked at least thirty-six hours before being ground for sandwiches.

"A cultural examination showed hemolytic staphylococcus aureus, with characteristics of the food poisoning group."

This report confirms again the importance of the following facts with regard to ham and staphylococci:

(a) Although most ham is cured and in a sense is a "preserved meat," the salt with which it is cured will not inhibit the growth of staphylococci in a way at all comparable with the way it inhibits the growth of Salmonella bacilli.

(b) Staphylococci in salted meats kept at room temperatures will reproduce rapidly and will ofttimes produce an enterotoxin in as little as five hours time.

(c) Staphylococcus enterotoxin, once formed in salted meat, will still maintain its ability to produce vomiting and diarrhea after sixty-seven days' storage in an electric refrigerator and after thirty minutes of active boiling.

(d) Staphylococci of any variety, if grown in canned salmon, will not produce enterotoxin, but if grown in cured meat products and custard-filled bakery goods will frequently produce it.

(e) Staphylococci from the throat and from pimples, boils, and slight wounds are so widespread as to be practically always present on the hands of food handlers and in moisture droplets coughed and talked into the air.

(f) Ham and other cured meats should be boned, sliced or otherwise handled under as aseptic conditions as possible. Once boning, slicing or handling has been done (and the usual numbers of staphylococci thereby introduced into the center of the meat mass), continuous refrigeration of that meat is necessary from that time on if enterotoxin formation is to be avoided.

(g) If ham, after boning and slicing, is kept at a temperature of 39°F. to 43°F., enterotoxin is not likely to be produced, even though the food is kept for a number of days. (D.F.S.)

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A simple method of determining the sulfonamide levels of various body fluids which can be carried out with a minimum of reagents and apparatus has been developed in the Department of Physiological Chemistry of the Naval Medical School.

The only materials required are alcohol, small pieces of filter paper impregnated with sodium nitrate and some impregnated with an azo dye, hydrochloric or sulphuric acid, and test tubes.

A description of the procedure is published in the Naval Medical Bulletin, September 1943, and will be an addendum to the Blood Chemistry Manual.

A table of conversion factors for the various sulfonamides was published in the Bumed News Letter, April 30, 1943, Vol. 1, No. 5, page 5. (J.J.E.)

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Physiological Responses to Immersion in Cold Water: The following experiments were undertaken at the Naval Medical Research Institute to determine the rate at which internal heat is lost when the body is immersed in water of lower temperature. Exploratory studies were first carried out on white rats and later repeated on young men insofar as this was possible without lowering their temperatures to a degree that might have done them harm.

The rats were immersed to their necks in the water and the internal (rectal) temperatures were recorded by means of a thermocouple. In water with a temperature of 50° to 59°F. the rats lost consciousness in 20 to 30 minutes and the rectal temperatures had fallen to about 70°F. When the water temperature was 77°F., the rectal temperature fell at a lessening rate as the animal cooled, and leveled off at about 82°F. in an hour and a quarter. Rats cooled to this degree often became "drowsy" and their movements were clumsy. Even when the water was as warm as 86°F., the rectal temperatures of the rats fell to 95°F. in an hour.

The nude human subjects either sat or stood in water up to their necks. The rate of fall of their rectal temperatures was much less than that of the rats. In water of 50°F. the fall amounted to 5° or 6°F. per hour. Even when the water temperature was 86°F., the rectal temperature fell slowly 1° or 2° in two hours. Bazett and Burton have shown that the water temperature must be about 94°F. to avoid a fall in internal temperature. That is, heat production close to the basal rate is sufficient to maintain the internal temperature at the normal level when the water temperature is 5°F. lower than that of the body. In cooler water heat production is increased by shivering. For example, one of the young men sitting in water of which the temperature was 60°F. began to shiver after half an hour. This caused a progressive increase in heat production during the next half hour, at the end of which it had become four times as great as it was in the pre-shivering period. However, this violent activity was not sufficient to lessen the rate at which the rectal temperature was falling.

For obvious reasons human subjects were not kept in the cold water long enough to reach the state of incoordination. But based on the rat experiments and on the literature, it is probable that man is in imminent danger of drowning when his internal temperature has fallen below 86°F. In water at 50°F., he would theoretically reach this state in two to three hours. But since the temperature of the northern oceans in the winter is close to 30°, it does not seem likely that the naked man can survive longer than one hour in such waters.

With this background, a study of the protective value of watertight suits was undertaken at the Naval Medical Research Institute. It was found that clothing that is pervious to water permits the rectal temperature to fall at the same rate as it does in the case of the naked man immersed in water of the same temperature. However, when the subject who is dressed in dry clothing encloses himself in a watertight garment before entering the water, the rectal temperature falls at only one fourth the rate observed when the man is not wearing the protective garment. Further, it should be pointed out that the watertight garment has distinct protective value even when worn over wet clothing. (L.H.N.)

British Surgeons Notes on Experiences in the North Africa Campaign: An ingenious use of sulfaguanidine was made. When large wounds existed near the buttocks and plaster was applied, oral administration of sulfaguanidine was used to render bowel contents relatively sterile and thus to minimize fouling of wounds.

The treatment of exhaustion was stressed. A number of cases admitted in a nervous and jittery state apparently from fatigue were treated with intravenous sedation, hot drinks, and rest. Many were rapidly restored to hormal and did not have to be evacuated.

Because a light attracts enemy fire, it was pointed out that personnel should be trained to apply dressings and splints in the dark.

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Gas Gangrene: Some of the clostridia (spore-forming anaerobic gram-positive bacilli), though normally saprophytic, may under suitable conditions become pathogenic and produce gas gangrene.

These bacteria are normal inhabitants of the intestinal tract of man and domesticated animals. They may persist as spores for long periods especially where manure has been used for fertilizer and in street dirt.

The clostridia are all toxin-producers. Those most likely to produce gas gangrene are Cl. welchii (B. perfringens), Cl. Septicum (B. oedematis maligni or vibrion septique), Cl. oedematiens (Novy) and Cl. oedematoides (Sordelli). More than one member of the group may be involved in the same infection. (Anaerobic nonhemolytic streptococci may, however, produce an infection clinically indistinguishable from gas gangrene.)

Because fatal gas bacillus infection may become established with great rapidity, early recognition is important and appropriate treatment should not await cultural studies.

Local signs include pain, edema, gas and odor. Gas is evidenced by fine crepitus on palpation about the wound, by bubbles expressed from the wound through the exudate, or by X-ray. The odor may be putrefactive or mouse-like. A mouse-like smell is characteristic of infective gangrene of muscle and, if present, at once stamps the infection as serious.

General signs include an abrupt rise in pulse which is especially noteworthy if accompanied by a rise of blood pressure. The temperature may be high in persons of good resistance or moderate in mild infections. If subnormal with rapid, thin pulse, it is a bad prognostic sign. The toxic manifestations vary with virulence and toxigenicity of the organism.

It is important to distinguish between gas infections confined to cellular connective tissues which are usually mild and those established in devitalized muscle which are apt to be grave.

The former are more common. So long as muscle is not involved the infection remains relatively mild. The mousy smell of muscle involvement is

absent. The toxemic manifestations are not severe. The temperature is not commonly high, although the pulse rate is often considerably elevated.

When muscle is infected by gas bacilli, sepsis spreads rapidly and toxemia is profound. The organisms usually develop a striking increase in virulence. Extension of the infective process occurs along the interspaces between fibers which become choked with exudate. Disintegration of the sarcolemma ensues, and the fibers are entered and disintegrated by the bacteria. Fascial planes afford avenues of extension. Spread is facilitated by thrombosis which cuts off the blood supply. As a rule clostridia cannot survive in the blood stream, but metastatic infection of distal muscle groups through septic embolism may rarely occur. Uninjured muscle with adequate blood supply may provide a barrier for only a short time. The extent of the skin gangrene is always far short of the muscle necrosis. Gas formation may be apparent late or not at all. A mousy odor, if present, is diagnostic. There is usually rapidly spreading edema. Clinical toxic manifestations are marked.

Management includes prevention of infection by a complete debridement within four to six hours of wound infliction supplemented by prophylactic serotherapy and chemotherapy. The sulfonamides have been shown to be effective against the Cl. welchii and Cl. septique.

Patients with wounds involving muscle damage should be frequently checked - every two to four hours - for mousy odor and abrupt rise of pulse.

When the diagnosis has been made, the appropriate surgical procedure should be carried out without delay. Chemotherapy, if it has not already been instituted, should be begun at once, preferably at first by intravenous administration. Polyvalent antitoxin should be administered in large and frequent doses, both intravenously and in the muscle, some being injected into the normal muscle about the wound. An initial dose of four to six standard therapeutic doses should be followed by two to four such doses every four to eight hours until the infection is under control. When the responsible organisms have been identified in the laboratory, the corresponding specific antitoxins (if available) can be used in place of the polyvalent.

The surgical procedure to be adopted depends on the type of tissue involved and the nature and extent of the infection. Infections involving only the cellular connective tissues and not muscles may be sufficiently dealt with by removal of sutures and a wide opening of the wound, possibly with simple incisions in addition. The mere presence of gas in a wound and numerous large gram-positive bacilli in a stained smear of the exudate does not justify amputation.

On the other hand, infective gangrene of muscle demands either radical extirpation of devitalized or necrotic tissue and the removal of foreign bodies, or amputation. In extensive, rapidly spreading muscle gangrene involving whole regions of a limb, amputation, if possible at a remote level, must be done promptly as a lifesaving measure.

All gas-infection wounds, whether the treatment has been simple incision, debridement or amputation, are left wide open.

Meleney advocates a loose packing, saturated with a creamy suspension of zinc peroxide. Trueta advocates a loose sulfanilamide pack.

Immobilization of the limb is essential, and fluid balance must be maintained. (Rogers, New England J. Med., July 29, '43.)

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Gas-Gangrene Antitoxin: At a conference held at the National Academy of Sciences, June 25, 1943, it was reported that the incidence of gas-gangrene infection in the present war has, so far, closely paralleled that experienced in World War I. In the latter, from 1.0 to 1.5 per cent of soft-tissue and skeletal-structure wounds were complicated by gas-gangrene infection. In the various theaters of the present war, the incidence of gas-gangrene infections in soft-tissue and skeletal-structure wounds has been as follows:

In the Dieppe raid 3%, almost all due to Cl. welchii.
In the Middle East 1%, predominantly Cl. welchii, a few Cl. novyi.
In the North African campaign 0.5%.
In the S. W. Pacific area 1.5% - 2%, predominantly Cl. welchii, a few Cl. novyi.
In the S. Pacific area -- very low incidence.

It has been observed that clothing is more important as a source of gas-gangrene infection than is soil. Tests have shown woolen clothing to contain gas-gangrene organisms in most of the samples tested, while cotton and silk are much less frequently infected. The relative unimportance of polluted soil in the production of gas-gangrene is attested to by the low incidence of this infection amongst the population of the Yangtze Valley, an area the soil of which is known to be heavily polluted with clostridia.

The conference recommended (1) that all penetrating abdominal injuries, all compound fractures of the long bones, all injuries involving deep and extensive muscle damage, all deep wounds of the perineum, receive, as soon as possible after injury (and again about one hour before definitive surgery), prophylactic gas-gangrene antitoxin; (2) that this antitoxin should be refined and concentrated and contain per dose, 10,000 units of Cl. welchii (perfringens) antitoxin, 10,000 units of Cl. septique (Vibrion septique) antitoxin, and 1500 units of Cl. novyi (oedematiens) antitoxin; (3) that until such time as the trivalent antitoxin is available in large quantities, the Armed Forces should use the bivalent (Cl. welchii, Cl. septique) antitoxin; (4) that, though the evidence for the therapeutic use of the antitoxin is not as clear cut as that for its prophylactic use, the antitoxin should be given in all diagnosed cases of gas-gangrene; (5) that the dosage for the therapeutic use should be three ampoules of the trivalent antitoxin every hour until signs of improvement appear (a total of 20 ampoules should be sufficient and the intravenous route of administration is to be preferred). (D.F.S.)

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Treatment of Burns: Certain new recommendations on the treatment of burns were adopted at a combined meeting on July 17 of the Subcommittees on Surgical Infections and Burns of the National Research Council and submitted to the Armed Forces. These recommendations are presented herewith for information in connection with the Bureau of Medicine and Surgery Form Letter of January 21, 1943, on the treatment of burns.

The Subcommittees reaffirm their former recommendation that sulfonamides be administered in the treatment of burns; specifically, that four grams of sulfadiazine be given by mouth initially, and that one gram be given every six hours thereafter at the discretion of the medical officer. It is recommended that a gram of sodium bicarbonate be administered with each gram of sulfadiazine.

It is recommended that in the treatment of burns there should be no opening of blisters or removal of dead skin or washing of the wound unless there has been gross dirt or fecal contamination, in which cases cleansing and removal of skin tags should be left to the discretion of the medical officer.

It is recommended that the use of all escharotics such as tannic acid or triple dye be discontinued.

It is recommended that boric acid not be used in the first-aid treatment of burns.

It is recommended that the first-aid treatment of burns should consist of application of an oily, non-adherent dressing such as petrolatum.

The above action of the Subcommittees with reference to boric acid refers particularly to boric ointment. This is based on the fact that the ointment base melts at approximately 120°F., a condition which may be encountered in tropical storage. This causes certain physical changes in the ointment impairing its effectiveness when cooled to the usual consistency.

The use of detergents for the removal of fuel oil, grease and dirt from burns, although seldom considered necessary, is discussed in the Bumed News Letter, August 6, 1943. (E.W.B.)

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Boric Acid Toxicity: The Naval Medical Research Institute has undertaken a study of possible chronic toxicity from the use of boric acid ointment for burns. The excretion of boric acid has been studied in both adult and growing dogs. No cumulative toxicity has been found and analysis of the tissues does not reveal selective accumulation of the boron ion in bone marrow to account for the anemia of burns. From the studies thus far it appears doubtful that the official five per cent boric acid ointment when applied to the denuded areas of the body such as might be encountered in a non-fatal burn could cause any boric acid intoxication. There is evidence, however, against the use of boric acid ointment in a strength greater than five per cent and against the sprinkling of powdered boric acid on wounds. Saturated boric acid solution in continuous irrigation of serous cavities is dangerous. A death due to boric acid poisoning from irrigation of the thoracic cavity with saturated boric acid solution has recently been reported by Ross and Conway. (Am. J. Surg., June '43.) (C.C.P.)

Penicillin - Absorption and Excretion: Rammelkamp and Keefer studied the blood concentration and urinary excretion of penicillin after the administration of 5,000 to 40,000 Florey units by several routes.

Intravenous injection of penicillin resulted in high initial concentration in the plasma followed by rapid fall. The plasma concentration was greater with larger doses, and after larger doses traces of the drug could be detected in the plasma for a longer time.

In all experiments in normal subjects from 37 to 99 per cent of the intravenous dose was found in the urine, the greatest amount being excreted in the first hour. The period of greatest excretion was accompanied by an increased volume of urine.

After intramuscular injection of comparable doses the rise of plasma concentration was rather rapid but did not reach as high a level. The concentration then tended to remain at peak height for 30 to 45 minutes and thereafter decreased gradually. Urinary excretion was rapid. Following subcutaneous injection there was a rather prolonged delay in the appearance of penicillin in the blood stream (85 to 115 minutes). Its concentration in the plasma never reached the high levels obtained by either intramuscular or intravenous injection but the peak concentration obtained was maintained for very much longer. Urinary excretion was definitely delayed.

Absorption from the body cavities was slow. Fluid aspirated from the pleural and joint cavities 13 and 22 hours after they had been injected with penicillin showed appreciable amounts of penicillin remaining.

Absorption of penicillin from the duodenum was rapid, whereas oral and rectal doses were poorly absorbed. These findings may be explained by the inactivating effect on penicillin of acid and Escheridia coli. After enteral administration the average amount excreted in the urine was small.

In the presence of renal failure, penicillin was not excreted rapidly and as a result high concentrations were maintained in the blood stream after intravenous injections.

No penicillin was found in the spinal fluid, saliva or tears in subjects receiving it intravenously.

These studies, confirming observations previously made by Florey that the excretion of penicillin in the urine is always less than the amount administered, suggest that it must be destroyed or inactivated in the body. In general, excretion in the urine accounted for about 60 per cent of the administered dose. When penicillin was administered by routes that result in slow absorption, the percentage recovered in the urine was even lower and, further, in those patients with renal failure, the total excretion was extremely low.

The location of the infection is of utmost importance in determining the route of administration since it is evident from these studies that penicillin is excreted rapidly and does not diffuse readily. Thus, if a localized infection is being treated by intravenous therapy the blood supply to the area must be adequate if sterilization is to be effected. It is advisable, therefore,

to give penicillin locally rather than intravenously in infections of the pleural or joint cavities. In generalized infections, such as bacteremia, intravenous or intramuscular therapy is indicated. (J. Clin. Invest., May '43.)

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While the author does not himself draw this conclusion, it is possible that where rapid absorption, high initial concentration, and at the same time a fairly prolonged effect is desired, the initial dose might be given partly intravenously and partly subcutaneously.

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Radiation Therapy of Acute Subdeltoid Bursitis: Brewer and Zink state "that the treatment of choice for acute subdeltoid bursitis is (roentgen) irradiation." If there is no improvement within 48 hours, such treatment may be considered a failure and more radical procedures undertaken. Immediately following treatment and for 8 to 24 hours there may be an aggravation of symptoms, but in 11 of the last 14 cases treated by the authors, resumption of duty was possible within 48 hours.

In chronic bursitis, only 30 per cent show any improvement under roentgen treatment and only an occasional patient is actually cured. If definite symptomatic relief does not occur within 10 days after treatment, the method must be considered a failure. (J.A.M.A., July 17, '43.)

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Recipe for Survival: Chambliss in an article called "Recipe for Survival" discusses the technic of abandoning ship as applied to the individual. He begins as one goes aboard the ship in peaceful waters and recommends first a very thorough knowledge of the ship, especially with regard to alternative routes to a prescribed abandon-ship station from the parts of the ship where one is likely to be. Where possible, routes should be chosen which are not traversed by steam or gasoline lines and which do not pass close to magazines or gasoline stowage.

In the event of a torpedoing or other disaster, a breakdown in communications or the isolation of his part of the ship by fire or water may make it necessary for the senior officer in such a position to make his own decision as to when to give the order to abandon ship.

If departure is desperately hurried and at night the author advises grabbing, if possible, a shirt and a pair of trousers, as they will afford protection from injury to the skin in going over the side and, if dark in color, may appear less attractive to sharks than a pair of bare white legs. He urges carrying at all times as abandon-ship equipment a pair of light leather gloves in the hip pocket, a slip of paper in the wallet describing the state of one's pay account, a knife, and a pocket flashlight. The author's ingenious method of waterproofing the flashlight is to encase it in what he calls a rubber sheath, the open end being closed with an elastic band.

Chambliss prefers the inflatable rubber life jackets to those made of kapok because of their greater flexibility. It is occasionally necessary to swim rapidly away from the ship, a feat not easy in a bulky kapok jacket. The rubber jacket can be inflated or deflated in the water. While the kapok jacket affords better protection to the chest against depth-charge injury, its protection to the abdomen is negligible. When swimming in areas where destroyers are dropping depth charges, one should arrange the life jacket in such a way as to get as much as possible of the abdomen out of the water.

One should never go over the lee side as it is impossible in a strong wind to swim at a rate greater than the drift of the ship. One is warned to go down a rope or hose hand-over-hand - never to jump or slide.

Chambliss advises swimming slowly (so as not to exhaust one's strength in a single sprint) for a rescue vessel, a raft or a large group of swimmers. Large groups of swimmers are more easily seen and the commotion they cause in the water tends to lessen the danger of sharks. (U.S. Nav. Inst, Proc., July'43.)

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The author, a survivor of the WASP, writes with humor and charm which emphasize his points. The article is well worth reading in its entirety.

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Studies on Acquired Resistance of Pneumococci to Sulfonamides While Under Treatment: Among pneumococci isolated before chemotherapy from 168 patients with pneumonia, meningitis, or endocarditis, Schmidt, Sesler, and Hamburger found by in vitro tests no organisms highly resistant to sulfonamide, only six strains moderately resistant, and the remaining 162 sensitive.

In 60 of 72 cases, the pneumococci isolated after periods of treatment which did not exceed 20 days, showed no increase in in vitro resistance to sulfonamide. In eight cases the sensitivity of the organisms varied without relation to treatment. In the remaining four cases the pneumococci became significantly more resistant during the period of therapy.

In three patients, two with pneumococcal endocarditis and one with unresolved pneumonia, treated for 47 days or more, the pneumococci, although sensitive to sulfonamide at the start, progressively acquired increased resistance to the drug. This resistance was not specific for the sulfonamide used in the therapy but was present for other sulfonamides as well. (Soc. Am. Bact., Jan.'43.)

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These studies emphasize the value of early intensive treatment with sulfonamides and tend, if confirmed in larger series, to cast some doubt on the wisdom of prolonged sulfonamide therapy.

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Heat Exhaustion: During June, Wallace found that a large number of trainees were admitted to a station hospital in Mississippi with heat exhaustion which developed during drilling.

The following corrective measures were instituted: the men were required to rest for an hour after a light noonday meal. The heavy meal was served in the evening. A sufficient amount of drinking water containing adequate salt was provided at the drill field and in addition men drilling were required to carry canteens of water at all times and encouraged to drink all the water they wanted. Frequent short rest periods were given and the men were allowed to drop out at the first sign of exhaustion. When possible, heavy outer coats and shirts were removed and in hot weather the trainees were not allowed to march in rain coats (which prevent the evaporation of sweat). The trainees were warned against the use of alcoholic beverages.

It took about a month before the drill sergeants were educated to the importance of carefully watching the men and seeing that the program was carried out.

In July there were 125 cases reported to the dispensaries and 43 hospital cases. During August there was a drop to 27 dispensary and 15 hospital cases. (Mil. Surg., Aug. '43.)

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Air Sickness in Aviation Cadets was reduced by Levy from 10 per cent to 2.8 per cent through proper psychological approach.

The cadet before flying is given a detailed explanation of the psychic effect of tenseness in producing air sickness. He is told how to relax if he feels this tenseness coming on, by shifting his position, breathing deeply, diverting his attention from the cockpit and more particularly from himself. The instructors attempt to divert his attention from his somatic stimuli (sweating, nausea, dizziness, or light headaches) to some external focal point on the ground.

Medication such as sodium bicarbonate is often given for its psychic effect. Only in the rare instances where nausea persists through the fourth flight are barbiturates or bromides used.

He found no cases of true air sickness (over-stimulation of the semicircular canals resulting in vertigo, nystagmus, nausea, and projectile vomiting and continuing for several hours after the end of the flight)

The fact that with proper psychological prophylaxis or therapy all cases cleared up within the first five hours of training led Levy to the conclusion that this type of air sickness in the initial stage of flying training is not per se a positive indication of unfitness for flying. (Mil. Surg., Aug. '43.)

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Dermatitis from Plants Other Than Poison Oak and Poison Ivy: A sample of paint was received from China with a request that it be examined to determine if the paint were responsible for severe dermatitis. After rooms had been painted, individuals working in these rooms would develop a severe and extensive dermatitis similar to that caused by poison ivy.

The paint contained a lacquer the source of which is the Chinese or Japanese lacquer or varnish tree, Rhus vernicifera or poison sumac. The constituent of the lacquer responsible for its dermatitic properties is a dihydric unsaturated phenol, "urushiol."

The oil from this tree is so irritating that persons have been known to contract dermatitis by passing near the tree. Its power to produce dermatitis seems to be retained indefinitely. (One instance reported after 1,000 years!) Varnish made from this lacquer is one of the most indestructible known. Mah Jongg sets coated with it are a possible source of dermatitis in susceptible individuals.

Poison oak and ivy (Rhus toxicodendron), poison elder or poison dogwood (Rhus vernix), western poison oak (Rhus diversiloba) and Chinese lacquer trees (Rhus vernicifera) all belong to the genus Rhus, family Anacardiaceae and are all capable of causing dermatitis. To these may be added the West Indian cashew, the Oriental cashew and the mango tree, all of which belong to the family Anacardiaceae and have been known to cause dermatitis. A good rule of thumb would be to consider all members of the genus Rhus as dermatitic and possibly include the entire family Anacardiaceae. However, the dermatitis does seem to affect some individuals more than others, thin-skinned blond individuals being more sensitive. (E.H.H.)

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Dengue: The occurrence of an epidemic of dengue in Hawaii should cause medical officers to be on the alert to prevent its spread. The following features of the disease and its epidemiology are presented:

Dengue is due to a filterable virus transmitted from man to man by Aedes aegypti and A.albopictus. The incubation period in man is from 5 to 9 days, and man is infective to the mosquito from 18 hours before onset of symptoms until the end of the third day of illness. The virus passes through an extrinsic incubation stage in the mosquito lasting 9 to 14 days, and the mosquito is then infective for life.

Characteristic of dengue are the sharp onset, the severe pains in muscles and bones, the saddle-back fever, the slow pulse and leukopenia. Duration of symptoms is 7 to 10 days. A rash is present in some epidemics. Depression of mental and physical tone is usually present in convalescence, and may be protracted.

Prevention includes the usual mosquito control measures against Aedes, and particularly the spray-killing of adult mosquitoes in ships, planes, and all other vehicles coming from an endemic or epidemic area. Use should be made of Freon insecticide bombs whenever possible. Presumably, a patient who has had dengue more than three days is no longer a source of infection to Aedes and therefore requires no special precautionary measures. (P.W.W.)

Public Health Foreign Report:

## Plague

Morocco, Casablanca: For the period June 1-10, 1943, 2 cases of plague with 1 death were reported. On June 16, 1943, 1 confirmed case and 1 suspected case of plague were reported.

Palestine, Raanana: For the week ended June 5, 1943, 3 cases of plague were reported.

Peru: During the month of April 1943, plague was reported in Peru as follows: Libertad Department, 3 cases, 1 death; Piura Department, 2 cases, 2 deaths. Plague infected rats were also reported in Piura Department.

Senegal: For the period May 31 to June 16, 1943, 6 cases of plague with 4 deaths were reported in Dakar and for the week ended June 28, 1943, 3 cases with 2 deaths were reported in the same place. In the vicinity of Tivaouane, for the period May 21-31, 1943, 20 cases with 11 deaths were reported and on June 3, 1943, 3 fatal cases were reported.

## Smallpox

Algeria: For the period May 11-20, 1943, 24 cases of smallpox were reported. For the period May 21-31, 1943, 20 cases of smallpox were reported. For the period June 1-10, 1943, 53 cases were reported.

British Guiana, Georgetown: For the week ended June 5, 1943, 1 case of smallpox was reported.

Dahomey: For the period May 1-10, 1943, 101 cases of smallpox were reported.

French Guinea: For the period May 11-20, 1943, 93 cases of smallpox with 9 deaths were reported.

Indochina (French) For the months of April and May 1943, 1,114 cases of smallpox were reported including 343 cases in Annam, 50 cases in Cambodia, 365 cases in Cochinchina, and 356 cases in Tonkin. For the period June 1-10, 1943, 120 cases of smallpox were reported in Indochina as follows: Annam, 26 cases; Cambodia, 21 cases; Cochinchina, 53 cases; Tonkin, 20 cases.

Iran: For the period February 27 to April 16, 1943, 85 cases of smallpox were reported.

Mexico: For the month of March 1943, 11 cases of smallpox with 1 death were reported in San Luis Potosi, and 12 cases with 1 death were reported in Vera Cruz.

Public Health Foreign Report (Cont.):

Smallpox

Morocco (French): During the month of May 1943, 57 cases of smallpox were reported.

Niger Territory: For the period May 11-20, 1943, 32 cases of smallpox with 3 deaths were reported.

Portugal, Lisbon: During the week ended June 5, 1943, 10 cases of smallpox were reported.

Sudan (French): For the period May 1-10, 1943, 143 cases of smallpox with 8 deaths were reported. For the period May 11-20, 1943, 526 cases with 16 deaths were reported. For the period May 21-31, 1943, 128 cases of smallpox with 3 deaths were reported.

Syria and Lebanon During the week ended May 15, 1943, 28 cases of smallpox were reported; the week ended May 22, 1943, 40 cases.

Turkey: During the month of April 1943, 1,201 cases of smallpox were reported (including 277 cases in Istanbul).

Typhus Fever

Algeria: For the period May 11-20, 1943, 333 cases of typhus fever (35 in Europeans) were reported. For the period May 21-31, 1943, 428 cases of typhus fever were reported. For the first 10 days of June 1943, 282 cases were reported, 27 cases of which were among Europeans.

France, Seine Department: During the month of May 1943, 2 cases of typhus fever were reported.

Germany: For the months of September to December 1942, inclusive, 367 cases of typhus fever were reported.

Guatemala: For the month of May 1943, 45 cases of typhus fever with 16 deaths were reported.

Hungary: For the period May 23-June 5, 1943, 37 cases of typhus fever were reported. During the week ended June 12, 1943, 32 cases of typhus fever were reported. For the 2 weeks ended June 26, 1943, 30 cases of typhus fever were reported.

Iran: For the period February 27 to April 16, 1943, 2,907 cases of typhus fever were reported, including 1,712 cases in Tehran. During the week ended May 1, 1943, 470 cases of typhus fever with 80 deaths were reported.

Public Health Foreign Report (Cont.):

## Typhus Fever

Mexico: For the month of March 1943, typhus fever was reported in certain towns as follows: Guadalajara, 6 cases; Mexico, D.F., 148 cases, 32 deaths; Oaxaca, 2 cases; Queretaro, 4 cases; Toluca, 3 cases. Typhus fever has been reported in Mexico, D.F. as follows: Week ended April 3, 1943, 40 cases, 9 deaths; April 10, 26 cases, 1 death; April 17, 26 cases, 8 deaths; April 24, 15 cases, 4 deaths.

Morocco (French): During the month of May 1943, 148 cases of typhus fever were reported.

Rumania: For the period June 1-7, 1943, 159 cases of typhus fever were reported. For the period June 8-15, 1943, 176 cases of typhus fever were reported. For the period June 16-23, 1943, 194 cases were reported. For the period June 24-30, 1943, 148 cases of typhus fever were reported.

Slovakia: For the period May 16-22, 1943, 29 cases of typhus fever were reported. For the week ended June 5, 1943, 19 cases of typhus fever were reported.

Spain: For the period April 11-27, 1943, 17 cases of typhus fever were reported. For the period April 18-30, 1943, 58 cases of typhus fever were reported. For the week ended May 8, 1943, 44 cases were reported in all of Spain. During the month of May, 34 cases with 5 deaths were reported in Bilbao and for the period June 15-22, 1943, 12 new cases were reported in the same locality. During the week ended May 29, 1943, 59 cases of typhus were reported.

Turkey: For the month of April 1943, 747 cases of typhus fever were reported (including 71 cases in Istanbul).

## Yellow Fever

Belgian Congo, Leopoldville: During the week ended May 22, 1943, 1 case of yellow fever with 1 death was reported.

Gold Coast, Kibi: On June 22, 1943, 1 fatal case of suspected yellow fever was reported.

Sierra Leone, Freetown: On June 12, 1943, 1 fatal case of suspected yellow fever was reported.

(Pub. Health Reps., July 2, 9, 16, 23, '43.)

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ALNAV, 2 Aug 1943: Destroy all lot number able two three nine eight cutter cholera vaccine.

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A diagnosis of fat embolism should be considered in any case of trauma, especially fracture of a long bone, if the following sequence of events occurs: (1) A period varying from hours to days (an average of three to six days) during which there is a satisfactory recovery from the trauma; (2) onset of the signs and symptoms of acute pulmonary edema with circulatory embarrassment and often a resemblance to bronchopneumonia; (3) appearance of cerebral symptoms resembling delirium tremens, and consisting of restlessness, anxiety, irritability, confusion, hallucinations, convulsions and coma with high temperature. Petechial hemorrhages often appear on the neck, chest and back.

Free fat can be found in the sputum and urine, and at necropsy the small vessels of the lungs, brain and other organs contain numerous fat emboli.

Prognosis: In cases developing cerebral symptoms the mortality is very high; however, there are probably many mild cases which recover, often undiagnosed.

Prevention: Careful splinting of fractures, with a minimum of manipulation and the least possible jarring during transportation.

Treatment: Oxygen is useful. (O.W.)

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Infections of Nose and Throat in Young Adults: Rhoads and Afremow report that hemolytic streptococci were found responsible for about two-thirds of the attacks of tonsillitis, pharyngitis, laryngitis and sinusitis in young adults. (Arch. Int. Med., Apr. '43.)

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"Fuel oil coming in contact with wounds and burns has not been found to delay healing."

"Do not attempt vigorous cleansing of fuel oil from a wound; the oil is unlikely to do harm." (Brit. Med. Res. Council, "A Guide to the Preservation of Life at Sea After Shipwreck.")

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Careful Packing and Labeling of Specimens for Naval Medical School is Requested: Recently many specimens for examination have been forwarded to the Naval Medical School, Bethesda, 14, Maryland, improperly packaged and labeled. In order to expedite reports and proper examination, great care should be exercised in the preparation and packaging of such specimens. Liquid specimens should be placed in heavy-walled glass containers securely stoppered, preferably with screw type caps, labeled with patient's name, type of examination desired and the station from which forwarded. A carbon copy of the request for examination should be enclosed in the mailing case. (E.H.H.)

ALNAV #152 - 4 Aug 1943: All Ships departing foreign ports for United States should obtain bills of health. Properly executed bills of health signed by US Army or Navy medical officers serving at foreign ports with port directors are acceptable at United States ports of entry.

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Dental Excavating Bur Allowance: The bur supply situation continues to be critical so that adherence to the ration allowance table, as given in BuMed letter L8-2/JJ57(013), page R-879, Navy Department Bulletin of 1 November 1942, is still required. Although it is necessary for dental officers to utilize all means within their control to conserve burs, care should be taken that the quality and efficiency of the dental service be not compromised by overzealous prosecution of restrictive measures. Restrictions more severe than those exacted by the table are not indicated.

The examples below illustrate practical application of the table to various sized activities:

Activity A (three dental officers attached):
Yearly allowance Stock No. 11-295 AHP bur #2.... 3 x 22 pkgs. = 66 pkgs.
Yearly allowance Stock No. 11-305 AHP bur #4.... 3 x 16 pkgs. = 48 pkgs.
etc.
Total yearly allowance all burs..... 3 x 315 = 945 pkgs.

Activity B (eight dental officers attached):
Yearly allowance Stock No. 11-295 AHP bur #2.... 8 x 30 pkgs. = 240 pkgs.
Yearly allowance Stock No. 11-305 AHP bur #4.... 8 x 21 pkgs. = 168 pkgs.
etc.
Total yearly allowance all burs..... 8 x 429 = 3432 pkgs.

Activity C (Twenty dental officers attached):
Yearly allowance Stock No. 11-295 AHP bur #2.... 20 x 38 pkgs. = 760 pkgs.
Yearly allowance Stock No. 11-305 AHP bur #4.... 20 x 27 pkgs. = 540 pkgs.
etc.

Total yearly allowance all burs..... 20 x 543 = 10,860 pkgs. (R.S.D.)

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Education Under V-12 Program: The attention of all hospital corpsmen should be invited to the provisions of BuPers Circular Letter Number 124-43 (published in Navy Department Semimonthly Bulletin of 15 Jul 1943) relative to the selection of enlisted personnel for college training under the Navy V-12 program. The Bureau wishes to emphasize the opportunities offered by this educational program. All eligible hospital corpsmen are urged to file applications with their commanding officer for consideration. As indicated in the BuPers letter, eligibility depends upon age, educational background, marital status, officer-like qualities and physical qualifications. Failure of selection will have no prejudicial effect upon the current status of candidates.

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BUMED-X-III-FHM
L8-2/JJ57(042)

21 Aug 1943

MEMORANDUM TO ALL BUREAU DIVISIONS, HOSPITALS RECEIVING PENICILLIN, AND NAVAL MEDICAL SUPPLY DEPOT, BROOKLYN, N.Y.

Subj: Penicillin, Appeals for, to the Bureau of Medicine and Surgery.

1. The Committee on Chemotherapeutic and Other Agents, National Research Council has expressed the feeling that the amount of penicillin allocated to the Armed Services should be reserved for service use.

2. The War Production Board, through the Office of Scientific Research and Development, has allocated to Dr. Chester Keefer, Chairman of the Committee on Chemotherapeutic and Other Agents a certain limited amount of penicillin for research and other purposes. Dr. Keefer is authorized, upon investigation of emergency appeals from civilian services, to make decision and if available to issue penicillin in cases in which there is good reason to believe that penicillin may be effective.

3. It is the desire of the Committee on Medical Research, O.S.R.D. and the above-mentioned N.R.C. Committee that all appeals for penicillin in civilian cases be referred to Dr. Keefer for action. His address is Evans Memorial Hospital, 65 East Newton Street, Boston, Mass.

4. When requests for penicillin are received from civilian sources, they should be informed that the penicillin supply of the Navy has been allotted for use in naval institutions and that the calls should then be referred to Dr. Chester S. Keefer at the above address.

D. G. SUTTON
Rear Admiral, (MC), USN
Acting Chief of Bureau

BUREAU OF MEDICINE AND SURGERY

BUMED-Y-hs
P2-3/P2-1(072)

2 Aug 1943

To: All Ships and Stations.

Subj: Use of Plague Vaccine.

1. All naval and Marine Corps personnel on active duty in areas where SERIOUS danger from plague exists shall be immunized against that disease. The consensus at this time is that there is no indication for its administration prior to departure from the United States.

2. The vaccine consists of a suspension of killed plague organisms. It may be procured from the nearest medical supply depot (not carried in storehouses), and is carried in the Supply Catalog under the designation, S1-180-Antiplague Vaccine, 20 cc. vial.

3. TECHNIQUE OF VACCINATION:

(a) Initial Vaccination: Two subcutaneous injections at 7 to 10 days interval, consisting of $\frac{1}{2}$ cc. and 1 cc. dose of vaccine, respectively.

(b) Stimulating Vaccination: A stimulating dose of 1 cc. may be given whenever it is deemed advisable by the medical officer.

4. It must be realized that absolute reliance must not be placed on vaccination alone for the prevention of plague, but, in addition, that it is imperative to institute rigid control measures directed towards its reservoir, the rodent.

5. The dates of vaccination and the amounts given shall be entered in the individual's health record.

L. SHELDON, Jr.
Rear Admiral (MC), USN
Acting Chief of Bureau.

BUREAU OF MEDICINE AND SURGERY

BUMED-C-LET
P3-2/NH(054-42)

23 Jul 1943

To: All Ships and Stations.

Subj: Suspension of Reimbursement Covering Hospitalization of Army and Navy Personnel on Active Duty.

Ref: (a) BuMed ltr. to All Ships and Stations, P3-2/NH(054), 17 May 1943; N.D. Bul. of 1 Jun 1943, R-1093.

1. Reference promulgated to the service information and instructions pursuant to the agreement between the War Department and the Navy Department suspending charges for the furnishing of supplies and services in connection with reciprocal hospitalization of United States Army and Navy personnel in the overseas medical department facilities of either service.

2. This agreement has now been extended to suspend for the duration of the war and for 6 months thereafter all requests for reimbursement of medical and hospital costs furnished to active-duty personnel by the medical department of either service to the other within the continental limits of the United States as well as overseas.

3. Accordingly, detailed reports of hospitalization will not be required from naval hospitals or other naval Medical Department activities, wherever located, covering the hospitalization or medical care of United States Army active-duty personnel; and NavMed Form U or other detailed reports will not be required covering the hospitalization or medical treatment of United States Navy and Marine Corps personnel by any unit of the Medical Department of the United States Army.

4. Exceptions to this directive are with respect to the hospitalization in naval hospitals of retired (inactive) officers, nurses and enlisted men of the Army and with respect to the hospitalization in Army hospitals of retired (inactive) officers and enlisted men of the Navy and Marine Corps, retired (inactive) nurses of the Navy, and inactive enlisted men of the Fleet Reserve and the Fleet Marine Corps Reserve. Detailed reports of hospitalization will be submitted and subsistence charges will be collected from retired (inactive) personnel of the Army hospitalized in naval hospitals. Collections of charges for subsistence of these personnel will be deposited with the local disbursing officer to the credit of the appropriation from which the mess is supported in accordance with the instructions contained in Bureau Circular Letters F, Appendix D, Manual of the Medical Department, on the subjects of Quarterly Ration Return and Supernumerary Patients. The War Department will continue to bill the Navy Department for hospitalization in Army hospitals of retired (inactive) enlisted personnel of the Navy and Marine Corps and inactive enlisted personnel of the Fleet Reserve and Fleet Marine Corps Reserve when individual authorization

for such hospitalization has been issued by the Bureau of Medicine and Surgery. Where individual authorization in these cases has not been issued by the Bureau of Medicine and Surgery the individual is required to defray the cost of subsistence as determined by the Army hospital concerned. Retired (inactive) officers of the Navy and Marine Corps and retired (inactive) nurses of the Navy when hospitalized in Army hospitals are also required to defray cost of subsistence as may be determined by the Army hospital concerned.

5. Officer personnel of either service will be required personally to defray the cost of subsistence when hospitalized in a hospital or other medical department unit of the other service. Accordingly, naval hospitals and other naval medical facilities subsisting active-duty officer personnel of the Army will provide for local collection of the subsistence charge at the rate specified in the naval appropriation act of the fiscal year involved. Receipt for the amount collected should be furnished the individual officers concerned. Funds so collected will be deposited with the local disbursing officer to the credit of the appropriation from which the mess is supported.

6. The reports prescribed by paragraph 2207(b), Manual of the Medical Department, will not be required during the period covered by the agreement. However, this agreement does not suspend the requirement that case records shall be maintained in naval hospitals as required by Circular Letter I-4, Appendix D, Manual of the Medical Department. It has been agreed that the Navy shall furnish the Office of the Surgeon General, United States Army, the individual medical statistical card (Form Fa) used by the Navy for the reporting of medical statistical data. To this end naval Medical Department units shall complete and forward Form Fa to the Bureau of Medicine and Surgery for Army personnel under the same instructions as govern the submission of the form for naval personnel. Similarly, the Medical Department of the Army will complete and forward to the Bureau of Medicine and Surgery the Army statistical card. In addition to the above, Navy Medical Department units will notify the duty stations of the individual Army patients admitted for treatment, giving the diagnosis, dates of admission and discharge, and such other data as may be requested by the local command. In turn, the Army Medical Department has been instructed to provide this same information with respect to naval personnel. The completion of these medical records is of importance both to the Government and to the individual and should receive first attention from those charged with the custody of the health records of the personnel concerned.

L. SHELDON, Jr.
Rear Admiral (MC), USN
Acting Chief of Bureau.

BUREAU OF MEDICINE AND SURGERY

BUMED-Y-bmm
P2-3/P3-1(081)

3 Aug 1943

To: All Ships and Stations.

Subj: Collection of Mosquito Specimens.

Enc: 1. (HW) Directions for Collecting, Packing, and Shipping Mosquitoes.

1. It is requested that entomologists and malariologists collect and send to the Naval Medical School, Bethesda, Maryland, mosquito larvae and adults, in accordance with enclosure (1).

2. The National Museum, which will identify the specimens, and the Naval Medical School appreciate this opportunity of building up a complete worldwide collection. The collection will be of tremendous value not only for use in identification of unknown material but also in the preparation of keys, descriptions, manuals, teaching material, etc. The importance of having available a complete collection as an aid for identification, especially in insular regions, cannot be overemphasized.

3. All specimens should be addressed as follows:

Medical Officer in Command
National Naval Medical Center
Naval Medical School
Bethesda, 14, Maryland
Attention: Dr. Alan Stone, National Museum.

L. SHELDON, Jr.
Rear Admiral (MC), USN
Acting Chief of Bureau.

Enclosure (1)

## DIRECTIONS FOR COLLECTING, PACKING, AND SHIPPING MOSQUITOES

(a) Specimens requested: A series of specimens, if possible, of at least 10 males, 10 females, and 10 larvae, representing each species to be found in the collector's area, is desirable. Frequently this is not possible. In such cases an incomplete collection is better than none at all. The condition of the specimens is of particular importance as they will be used for the purpose of study and illustration. The identification of the species by the collector is not necessary. Upon receipt of the material, a list of the specimens with their identification will be forwarded to the collector as an acknowledgement.

(b) Directions for Packing and Shipping.

(1) Larvae. Mosquito larvae may be killed by any means so long as they do not become distorted in shape or discolored. A convenient method is to drop them in hot water (not boiling) for 15 or 20 seconds. They should be preserved and shipped in 70 per cent alcohol. In transferring larvae from water it is best to first place them in 50 per cent alcohol for about an hour, then into the 70 per cent. To avoid injury in transit by movement of an air bubble in the container, place the larvae in a smaller vial or shell vial filled with alcohol and plugged with cotton, then place this in larger vial with alcohol. A small air bubble should be present in larger container to allow for expansion. Any number of larvae may be placed in the small vial so long as the specimens do not become crushed.

(2) Adults. Mosquito adults when dry are exceedingly delicate. Specimens are best packed while fresh and placed in pill boxes between layers of cellu-cotton or cleansing tissue. Plain cotton is unsatisfactory because of injury to specimens when removed. Lense paper is too hard. Ten or more specimens may be packed in a pill box. They should have sufficient packing to prevent any movement, but not so much that they become crushed or rubbed. If any naphthalene is placed in the box, care must be taken that it is in very fine flakes and that it will not move about and come in contact with specimens.

(3) Labeling and Shipping. Full data for each lot of specimens should be recorded and enclosed with each pill box or in each vial. If it is necessary to send data separately each box and vial should be numbered. The corresponding number should be placed with the collecting data. Data should include date, locality, elevation, habitat, and name of collector. Additional notes on habits, abundance, and distribution are desirable.

All specimens should be sent to the Naval Medical School, Bethesda, Maryland, Attention: Dr. Alan Stone, National Museum.

BUREAU OF MEDICINE AND SURGERY

BUMED-H-DL
P11-1/SS(042)

5 Aug 1943

To: All Ships and Stations.

Subj: Pharmacist's Mates for Submarine Training.

Ref: (a) Article E-5405, BuPers Manual.
(b) Article 1535, Manual of the Medical Department.

1. The Bureau notes with concern the increasing number of hospital corpsmen who have requested, and have been recommended by commanding officers for, training and assignment to submarines for duty, who are disqualified for training in subject specialty upon arrival at the Submarine Base, New London, Conn., either by reason of physical defects or lack of basic qualifications for this type of duty. In order to reduce the number of disqualifications to a minimum, all activities are requested to comply with the provisions of references (a) and (b) with particular emphasis on physical and basic qualifications for duty independent of medical officer factors.

2. In order to meet the increasing demand of the service for hospital corpsmen qualified for submarine training, this Bureau desires requests from hospital corpsmen who are considered by their commanding officers to be good material and to meet all physical requirements as stipulated in reference (b).

3. A school for pharmacist's mates entering the submarine service has been established at the Submarine Base, New London, Conn. The length of the course of instruction in this school is 6 weeks and the curriculum has been designed to give hospital corpsmen intensive training in subjects which will be of maximum benefit in adjustment to the responsibilities of duty independent of a medical officer in the submarine service. Hospital corpsmen who successfully complete training in the above school are enrolled in the Submarine School, New London, Conn., for the final phase of training in submarine duties.

L. SHELDON, Jr.
Rear Admiral (MC), USN
Acting Chief of Bureau.